Replace section 90-6 with:

90-6 ROLLER COMPACTED CONCRETE

90-6.01 GENERAL

90-6.01A Summary

Section 90-6 includes specifications for furnishing and curing roller compacted concrete (RCC.)

90-6.01B Definitions

Not Used

90-6.01C Submittals

Not Used

90-6.01D Quality Control and Assurance

90-6.01D(1) General

Fabricate compressive strength test specimens under ASTM C 1435.

Paragraph 2 of section 90-1.01D(2) does not apply to RCC.

Prequalify RCC under section 90-1.01D(5)(b).

90-6.01D(2) Shrinkage

Perform shrinkage tests on samples that have been cut from compacted RCC. Remove specimens from the in-place compacted RCC between 24 hours and 48 hours age. Store specimens in a water bath. At least 24 hours before the initial reading trim specimens to a 4 inch by 4 inch cross section and the required length for a 10 inch gage length.

90-6.01D(3) Compressive Strength

The fifth paragraph of section 90-1.01D(5)(a) does nota apply to roller compacted concrete. If the compressive strength is 5000 psi or more, 42 days are allowed to attain the specified strength.

90-6.02 MATERIALS

90-6.02A General

If the minimum cementitious material content specified is less than 425 lb/cu yd, replace Equation 2 in 90-1.02(B)3 with:

$$(425 - MSCM - PC) \geq 0$$

90-6.02B Aggregate Gradings

90-6.02B(1) General

Section 90-1.02C(4) does not apply to RCC.

Furnish aggregate divided into two or more sizes. The grading of each of the sizes is at your discretion. Control the gradation of each size with a minimum of 4 sieves. Maintain the gradation on each sieve within 10 percentage points of your target for each sieve.

90-6.02B(2) Combined Aggregate Grading

Combined aggregate must be graded within the limits shown in the following table:

Sieve size	Percentage passing				
	1/2 inch max	3/4 inch max	1 inch max	1-1/2 inch max	2 inch max
2-1/2 inch	--	--	--	--	100
2 inch	--	--	--	100	90–100
1-1/2 inch	--	--	100	87–100	78–97
1 inch	--	100	82–100	71–91	--
3/4 inch	100	87–100	72–91	--	56–76
1/2 inch	81–100	71–91	--	50–71	--
3/8 inch	71–91	--	50–71	--	39–59
No. 4	49–70	42–63	--	30–49	27–46
No. 8	33–54	--	23–42	--	--
No. 16	--	18–36	--	13–28	--
No. 30	12–28	--	8–22	--	6–18
No. 50	--	5–19	--	3–15	--
No. 100	3–16	1–13	1–12	1–11	1–10
No. 200	0–10	0–9	0–8	0–7	0–7

90-6.03 CONSTRUCTION

90-6.03A General

Not Used

90-6.03B Mixing and Transporting RCC

90-6.03B(1) General

Mix and transport concrete under 90-1.02G. You may use batch mixing or horizontal shaft mixing. Section 90-1.02G(5) and 90-1.02G(6) do not apply.

Protect concrete hauled in open-top vehicles from rain or evaporation with retractable covers.

Discharge RCC material within 45 minutes after the addition of the cement to the aggregates. Deposit the RCC material directly into the hopper of the paver or into a secondary material distribution system that deposits the material into the paver hopper.

90-6.03B(2) Horizontal Shaft Mixing

A horizontal shaft mixing plant must be a central plant type with a twin-shaft mixer, capable of either batch or continuous mixing, equipped with synchronized metering devices and feeders to maintain the correct proportions of aggregate, cement, SCM, and water. Plants must utilize:

1. Controlled aggregate feed rate. Use aggregate bins with a feed rate controlled by a variable speed belt, or an operable gate calibrated to accurately deliver any specified quantity of material. The feed rate from each aggregate bin must be readily adjustable to change aggregate proportions. Feed rate controls must maintain the established proportions of aggregate from each stockpile bin when the combined aggregate delivery is increased or decreased.
2. Plant scales. Plant scales must conform to Section 90-1.02F(3), “Proportioning Devices.”
3. Cement and SCM storage. Supply separate and independent storage silos for cement and SCM. Each silo must have a sign at each fill inlet clearly identifying the material that is in the silo that is easily read even when completely coated with dust. Make the sign from a durable material, with minimum two-inch high by ¼-inch wide letters that are raised, indented, or cut.
4. Preblended portland cement and SCM. If you preblend portland cement and SCM at the batch plant, demonstrate, with a testing plan, the ability to successfully produce a uniform blended material meeting the mix design requirements. Perform testing on at least a daily basis to ensure both uniformity and proper quantities.
5. Cement and SCM feed unit. Provide a satisfactory means of dispensing portland cement and SCM, volumetrically or by weight, to ensure a uniform and accurate quantity of cementitious material enters the mixer.

6. Water control unit. Use a water control unit capable of measuring the required amount of water for the approved mix by weight or volume. Ensure that the unit is equipped with an accurate metering device. Vary the amount of water to be used only with the Engineer's approval.
7. Gob hopper. For continuous operating mixers, provide a gob hopper attached to the end of the final discharge belt to temporarily hold the roller compacted concrete material in order to allow the plant to operate continuously.

90-6.04 PAYMENT

Not Used